Abstract

A digital signature scheme for a "smart" card utilizes a set of prestored signing elements and combines pairs of the elements to produce a new session pair. The combination of the elements is performed partly on the card and partly on the associated transaction device so that the exchange of information between card and device does not disclose the identity of the signing elements. The signing elements are selected in a deterministic but unpredictable manner so that each pair of elements is used once. Further signing pairs are generated by implementing the signing over an anomalous elliptic curve encryption scheme and applying a Frobenius Operator to the normal basis representation of one of the elements.